

## W-25: The Davidsonville Site and Maryland Air Defense, 1950-1974

MERLE T. COLE

**D**RIVING WEST ALONG MARYLAND route 214 (Central Avenue) from Annapolis, the traveler encounters a stop light at the junction with Route 424. Seven-tenths of a mile past the light, across from the Davidsonville Elementary School, a somewhat narrower hard-surface road angles in from the left. Queen Anne Bridge Road alternates between straight stretches and twisting turns. The scenery varies from open fields and neatly maintained homes to thick woods crowding the berm. A mile from Central Avenue, Queen Anne Bridge Road joins a pleasant country lane called Wayson Road. At this intersection, a small yellow sign carries the warning "MILITARY ENTRANCE." On the left, in the "V" formed by the junction of the two roads, stands a somewhat sinister looking facility: one-story buildings enclosed by a chain link security fence, topped by strands of barbed wire and coils of rusting barbed tape. Incongruously, a metal sign attached to the fence announces "ANNE ARUNDEL RADIO CLUB." Just down Wayson Road, another sign, this one green, points along Elmer F. Hagner Lane to the entrance of the Anne Arundel County Police Academy. If the traveller, like many who happen upon this scene, slows to investigate, he will notice signs on the buildings conveying distinctly civilian activities: a Boy Scout troop and a day care center. Suspended from a dilapidated guard shack, a small wooden plaque identifies "D.F.R.C." The Davidsonville Family Recreation Center now occupies a site which was once part of the last-ditch defensive screen around the nation's capital.

---

Mr. Cole is Public Affairs Officer for 5th Security Battalion, Maryland State Guard.

More accurately, the facility provided one segment of an aerial "umbrella." Located less than 20 air miles from the U.S. Capitol building, it was the fire control center of a Nike-Hercules surface-to-air missile (SAM) battery. The buildings and shelters now used to train police cadets housed the "business end" of the battery. Twelve missiles, each tipped with a nuclear warhead, lurked in concrete shelters, ready to destroy any Soviet bombers which had managed to evade Air Force interceptors. The Hercules missiles were never fired, for the bombers never came. The story of the Davidsonville facilities, known in military parlance as "Site W-25," is illustrative of the broader story of air defense operations which shielded the Baltimore-Washington area from the mid-1950s to late 1973. It is a story largely untold.

### NATIONAL AND CONTINENTAL AIR DEFENSE

America's air defense program sprang from the experiences of the Second World War, in which Allied bomber raids had inflicted severe blows to Germany's ability to sustain its war effort by progressive destruction of industrial, transportation and military centers. Hundreds of thousands of German civilians in such cities as Dresden, Hamburg and Berlin paid the price as the Luftwaffe's flak, radar and night fighter capabilities were demolished. In the Far East, America's relentless "strategic bombardment" offensive incinerated Japan's five largest cities, culminating in the nuclear devastation of Hiroshima and Nagasaki. The battles for air supremacy left an awesome legacy to the post-war world: jet fighters and bombers, nuclear weapons,

long-range missiles, and thick antiaircraft belts around critical locations.

Distilling this experience and assessing the post-war threats, the American military created a system of overlapping defenses to protect the Continental United States (CONUS) from aerial attack by the Soviet Union. At this time, the ultimate air weapon was the manned bomber, although attention was being devoted to perfecting reliable ballistic missiles of intercontinental range. The planners were spurred by Russia's detonation of an atomic bomb in September 1949 and a hydrogen bomb four years later.

As early as February 1949, the House Committee on Armed Services had recommended allocation of \$85.5 million for establishment of a land-based radar air warning and control system. The plan envisioned eight Air Force-commanded air defense areas, encompassing all of CONUS, for peacetime operation, to be supplemented with a further twelve areas by Air National Guard mobilization in the event of war. The Air Force was assigned principal responsibility for, and command and control over, CONUS air defense, with the sister services providing forces as required. During 1948, this division of effort had been hammered out in the so-called Key West and Norfolk "roles and missions" agreements, subsequently formalized in Department of Defense Directive 5100.1.<sup>1</sup>

Among its myriad missions, the Army was assigned an air defense role: to "organize, train and equip . . . antiaircraft artillery units" and "to provide Army forces as required for the defense of the United States against air attack . . ."<sup>2</sup> The Army did not, however, create a specific air defense command until July 1, 1950, immediately after the Korean War erupted. On that day, the Army Antiaircraft Command, commonly known by the acronym ARAACOM, was activated. Even though it was a major command reporting directly to the Army Chief of Staff, ARAACOM initially had only planning and training oversight functions. Not until April 10, 1951, did it assume actual command of Army air defense units. By July of that year, ARAACOM directed a total of 38 antiaircraft

artillery battalions from its headquarters at Ent Air Force Base, Colorado Springs, Colorado. Half of those battalions were Regular Army, and the remainder were in the Army National Guard. Guard units were included under a September 1952 agreement, primarily because the Regular Army had insufficient battalions to meet mission requirements. The first Guard on-site battery opened in March 1954 at New York City. In August 1954, ARAACOM became Army's contribution to the U.S. Continental Air Defense Command (CONAD), a unified command under Air Force executive control. CONAD was charged with the overall defense of CONUS, including Alaska, from air attack. Army air defense forces in Alaska, however, remained under a separate command (U.S. Army, Alaska) rather than being subordinate to ARAACOM.<sup>3</sup>

Antiaircraft artillery unit deployment patterns and organization structures were founded on a basic precept of air defense doctrine. Since it was obviously impossible to protect all of CONUS, it was necessary to concentrate available resources around critical industrial, military and civilian population centers—the primary objectives of an air attack. Initially 23 vital areas were selected by the Joint Chiefs of Staff for coverage. On-site antiaircraft firing batteries were controlled by Air Force air defense direction centers, which also controlled fighter-interceptor aircraft. Conventional gun strength peaked in 1953 at 61 gun battalions, comprising mostly "left over" World War II ordnance: 90-mm. and 120-mm. cannon, 40-mm. and .50-calibre multiple automatic weapons. A few firing batteries boasted the most sophisticated antiaircraft guns ever fielded by the United States, the radar-directed 75-mm. Skysweeper. But even this superior weapon was inadequate to match the performance of jet aircraft, which would become increasingly prevalent in Russia's inventory after 1953. A contract for development of an Army SAM had been let in February 1945. This project came to fruition in December 1953, when the first operational Nike-Ajax went into service with the 36th Antiaircraft Ar-

tillery (AAA) Missile Battalion, at Fort George G. Meade, Maryland.

The Ajax, first in a series of guided missiles developed under the Nike program, permitted a radical change in Army air defense deployment. Ajax was a pencil shaped, liquid-fueled missile with a solid propellant booster which fell away after burnout. The missile (without booster) was 34 feet long, with a one-foot diameter and weighing nearly one ton at launch. It carried three high-explosive warheads, aggregating 300 pounds, to a maximum range of 25 nautical miles, and a maximum altitude of 11 miles, at Mach 2.5.<sup>4</sup> Being radar guided, the Ajax was vastly more efficient than conventional gun artillery: a single missile was employed to be capable of destroying targets which an entire battalion of 16 120-mm. guns would have to fire 600 rounds, at maximum rate, to equal. Advent of Ajax permitted ARAACOM to phase out large numbers of Regular Army gun batteries. By 1955, there were more missile than gun batteries in the Regular Army, and conversion to "all missile" was completed in June 1960. Equally significant, because of Ajax's extended range, fire units could now be relocated from "downtown" sites, and still destroy attacking aircraft before they reached their bomb-release line.<sup>5</sup>

In January 1956, the Secretary of Defense assigned ARAACOM exclusive responsibility for SAM's used in "point" or local defense. On March 21, 1957, ARAACOM was redesignated Army Air Defense Command (ARADCOM), since the term "anti-aircraft"—associated with gun batteries—had fallen into disfavor. Six months later, CONAD (including ARADCOM) became the American contribution to NORAD—the joint U.S.-Canadian North American Air Defense Command. Under a bilateral treaty, the NORAD commander (an Air Force general) was responsible for coordinating all continental air defense activities. The Canadian and American air forces were responsible for detecting targets at the earliest moment, identifying targets as friend or foe and engaging the targets at maximum range to destroy them, turn them back, or at least reduce their number—"inflict attrition," in military parlance.

(Thus, "area defense" was an Air Force mission, as opposed to the "point" defense role of ARADCOM.) A manned bomber surveillance network accomplished the detection function through the Distant Early Warning and Mid-Canada radar lines. Offshore, radar coverage was extended by "barrier forces" comprising picket ships, Air Force and Navy radar aircraft patrols, and "Texas tower" radar stations. Data from early warning radars were fed into SAGE (Semi-Automatic Ground Environment), an Air Force sector-level command and control system. Sectors were "the basic unit for fighting the air battle," and constituted a subdivision of the broad regions into which NORAD had divided the continent. SAGE centers attempted to identify intruders, and in turn fed tracking data to Air Force and ARADCOM control and direction centers. When the intruder entered a band of "contiguous radar coverage" overlapping the United States-Canadian border, SAGE would initiate attack by "scrambling" fighter-interceptor squadrons and launching Bomarc missiles. (The Bomarc was a nuclear tipped, ramjet powered guided missile with a range of 400 miles at Mach 2.5, operated by the Canadian and American air forces.) If the area defense provided by these weapons failed, SAGE continued tracking and passed information to ARADCOM fire control units. ARADCOM's Nike batteries then came into play as "the ultimate defense" of the protected localities. Battery fire was coordinated by an Army Air Defense Command Post (AADCP), operating either the Missile Master or BIRDIE (Battery Integration and Radar Display Equipment) systems. Missile Master, which first became operational with the 35th Artillery Brigade at Fort Meade in December 1957, assured that no unengaged intruder aircraft penetrated the defended area and that only one battery attacked a particular target. The system could coordinate a maximum of 24 firing batteries. BIRDIE could control up to 16 batteries.<sup>6</sup>

ARADCOM's ultimate air defense missile arrived on the scene in mid-1958, when Hercules, second of the Nike family, began to replace Ajax in several batteries. Devel-

opment of the new missile had begun the same year Ajax became operational (1953). Hercules, like Ajax, heralded a significant expansion of air defense capability. Solid-fueled to facilitate launching preparation and reliability, the dart-shaped Hercules measured 42 feet long and 3 feet in diameter, blasting off at 5 tons. With four boosters, Hercules streaked toward its target at Mach 3.6, reaching a maximum altitude of 29 miles with a range of 80 nautical miles. Unlike Ajax, Hercules devastated attacking bomber formations with a 120-pound nuclear warhead. (Conventional high-explosive warheads were also fitted to some Hercules.)<sup>7</sup>

ARADCOM strength peaked in 1963, with 184 firing units (134 Regular Army, 50 National Guard) on-site. However, beginning in September 1968, the command was subjected to almost annual realignments and reductions. On February 4, 1974, the Defense Department announced that ARADCOM would be inactivated, excepting the 31st Air Defense Artillery Brigade, which had been activated during the Cuban Missile Crisis (October 1962) and would remain on duty in southern Florida. By December 31, 1974, ARADCOM's remaining regional headquarters, eight groups, 13 battalion headquarters, and 48 Hercules firing batteries were closed out. ARADCOM headquarters was inactivated January 4, 1975.<sup>8</sup>

ARADCOM and its subordinate units has fallen victim to technological advances, interservice rivalry, experiences in the Vietnam War (where conventional gun batteries proved deadlier than Soviet-supplied SAMs), and international arms reduction movements. The Defense Department had been aware of Russia's increasing reliance on ICBMs in lieu of manned bombers. Since 1955 ARADCOM and the Army Department had been the most persistent advocates of anti-ballistic missile (ABM) development and deployment. The Army's Nike-Zeus ABM program had been abruptly terminated in 1963, and the apparent salvation heralded by the Sentinel/Safeguard ABM program—for which ARADCOM was assigned operational responsibility—was negated by signature of the 1972

Strategic Arms Limitation Treaty. SALT effectively killed all United States ABM preparations, and with them ARADCOM's last chance to claim a viable mission.<sup>9</sup> One source succinctly summarized the rationale for deactivating the command:

As the United States [by signing the SALT accords] has relinquished the option for continental defense against strategic missiles, the Department of Defense has placed a lesser priority of maintenance of the existing posture of defense against manned aircraft.

Future efforts will be directed toward operations that will provide long-range warning of a bomber attack and improved air space surveillance and control.<sup>10</sup>

#### THE WASHINGTON-BALTIMORE DEFENSE

Responsibility for air defense of the national capital was assigned to the 35th AAA Brigade, which transferred from Fort Bliss, Texas, to Fort Meade in February 1950. Major components of the brigade included a group headquarters and four battalions. During 1951 the mission was expanded to include planning the defenses of Baltimore, Pittsburgh, Philadelphia and Norfolk. Special emphasis on implementing Baltimore's defense came in October of that year. Additional group headquarters and battalions arrived during 1951 and early 1952 as the brigade built up to full strength. In April 1952, these units began moving to their permanent sites, a phase completed by July 31. The 208th AAA Group defended Baltimore, while the 19th AAA Group secured the nation's capital.

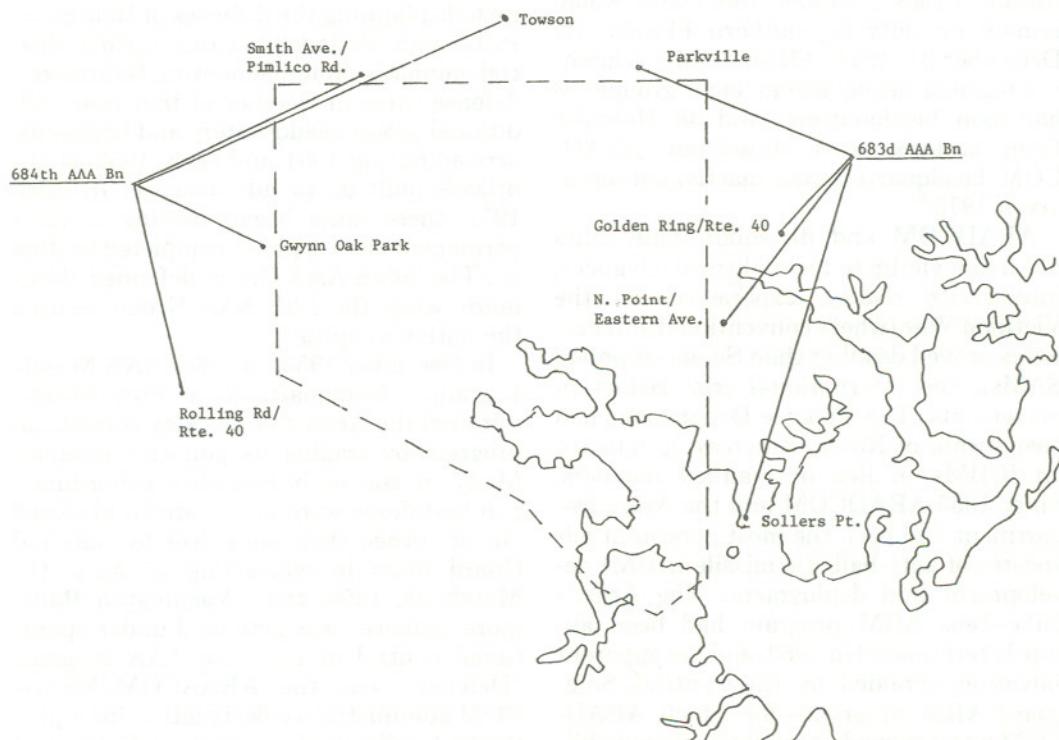
In December 1953, the 36th AAA Missile Battalion, headquartered at Fort Meade, initiated the Army's Nike-Ajax conversion program by trading its guns for missiles. Many of the 35th Brigade's subordinate gun battalions were inactivated and closed out or turned their sites over to National Guard units in converting to Ajax. On March 28, 1956, the "Washington-Baltimore Defense" was activated under operational control of the 35th AAA Brigade. "Defense" was the ARAACOM/ARADCOM administrative designation for a protected locality within a region. Control of tactical units (groups, battalions and bat-

teries) within a defense was exercised by brigades such as the 35th until December 1973, at which time brigade echelons fell to the budget ax and were replaced by groups (the 23d for Washington-Baltimore).<sup>11</sup>

Maryland military forces entered the expanding air defense picture in November 1955, when the Army Department allotted the 683d AAA Battalion (90-mm. Gun) to Maryland's Guard. The new battalion was organized and federally recognized November 21. Lt. Col. Thomas F. Cadwalader, Jr., was named commanding officer, with headquarters at the Golden Ring/Route 40 site, one of four turned over by the Regular Army's 602d AAA Battalion. The other sites were: Moore Avenue/Oakleigh Road (Parkville), North Point/Eastern Avenue, and Sollers Point. On October 1, 1956, a second antiaircraft battalion, the 684th, was allotted and federally recognized. Command was entrusted to Lt. Col. George M. Gelston, headquartered in Towson. Gelston's unit assumed control of four additional sites on the Baltimore perimeter,

formerly manned by the 89th AAA Battalion (Regular Army): Smith Avenue/Pimlico Road, Gwynn Oak Park, Rolling Road/Route 40 and York Road (near the present Beltway junction). Four sites on the city's southern edge, including the air raid warning system, were manned by the Regular 35th AAA Battalion until inactivated in December 1957.<sup>12</sup>

The decision to reassign antiaircraft artillery gun sites to National Guard units was part of a nationwide plan aimed at freeing Regulars to man the new Ajax sites. Guard operation of gun sites was also considered more economical since dormitories, mess halls, and other amenities required by Regulars could be dispensed with when "home town" troops were assigned. The 90-mm. guns, which fired a 24-pound explosive shell to an effective ceiling of 7.5 miles, were retained in locality defense schemes to "deal with any bombers which might get through" the rapidly forming Ajax screen. Getting state units operational proved a considerable task. Neither guns nor am-



MAP 1. Army National Guard AAA Battery Sites: 1955-1959.

munition were authorized until the battalions could recruit to minimum operational strength, including the critical complement of skilled radar, electronic and fire control technicians. In this regard, Maryland faced the same difficulty as other states participating in the on-site program. Shortages were so acute that normal age limits for new enlistees and reenlistees were liberalized nationwide. Even after guns and ammunition were received, Guardsmen were not permitted to fire their weapons except in case of actual attack. This prohibition was necessary due to the siting of the batteries in heavily populated areas where muzzle blast and falling shell fragments would prove hazardous. Practice firing, against radio-controlled drones, was accomplished at the antiaircraft artillery range at Fort Miles (Bethany Beach), Delaware.

Each battalion was authorized 540 men. Recruitment efforts concentrated on men living in the general vicinity of battery sites, under a concept which envisioned crews functioning somewhat like a rural volunteer fire brigade: when the alarm sounded, crewmen were to rush to their guns to assist the one officer and 15 Guardsmen on full-time duty there. During the recruitment period, the gunless sites served as quasi-social centers, where family gatherings were held and food was provided to the needy on holidays.<sup>13</sup>

In October 1957, Maj. Gen. Milton A. Reckord, state adjutant general, announced the Army National Guard had been directed to take over five Ajax sites around Baltimore. Following a period of on-site training and formal schooling at the Army Air Defense School, Fort Bliss, men of the 683d and 684th would forsake their obsolete 90-mm. guns and move into the Jacksonville, Granite, Fork, Cronhardt and Fort Smallwood Ajax sites. This conversion was part of a nationwide Army plan, formally announced in December 1957, to upgrade Guard capabilities while releasing Regulars for Hercules duty. The plan bore first fruit in September 1958, when California's 720th AAA Missile Battalion, the test unit, took over an Ajax site in the Los Angeles Defense. The conversion program was com-

plete by June 1961, with Guardsmen operating a total of 76 Ajax sites.<sup>14</sup>

In anticipation of this weaponry change, Maryland's gun battalions were reorganized and redesignated 683d and 684th Missile Battalions (Nike), effective January 15, 1958. Similar reorganizations came to Virginia's 125th (Alexandria) and the District of Columbia's 340th and 380th gun battalions.<sup>15</sup>

On March 1, 1959, the National Guard Bureau authorized General Reckord to activate two more air defense units. Headquarters and Headquarters Battery (HHB)—691st Artillery Group (Air Defense) would serve as the tactical command for the state's growing air defense contingent. The group commander was also designated State Air Defense Officer (SADO). A new fire unit, the 103d Missile Battalion (Nike-Ajax) was allotted simultaneously, to permit Marylanders to occupy two sites which, although situated in southern Maryland, were previously manned by the District of Columbia Guard. (The District's missile battalions were converted to other types of Guard units.) The 103d—an HHB and two rather than the usual four firing batteries—was immediately redesignated "686th," but was never actually organized. Instead, the 683d, 684th and 686th were consolidated into 70th Artillery, a "parent regiment" under the Army's Combat Arms Regimental System (CARS). Since the 684th was the "senior" battalion, its coat of arms and distinctive insignia were assigned to 70th Artillery. By June 1, state air defense forces were aligned as shown in Table 1.<sup>16</sup>

On Wednesday, September 23, 1959, the first two Ajax sites were formally turned over to state troops under an "interim agreement" between General Reckord and the ARADCOM commander. Battery D—1st Missile Battalion (Lt. Col. Carl W. Schmidt) moved to Fork (Site Baltimore-09), while Battery D—2d Missile Battalion (Lt. Col. Joseph E. Howell) took over at Cronhardt (Site BA-92). At that time, ARADCOM planned for Maryland's Guard to inherit Ajax sites at Granite and Fort Smallwood by January 1960, to be followed by Croom Station, Accokeek and Gaithers-

TABLE 1.  
Army National Guard Air Defense Forces: June 1, 1959

Prior Designation	New Designation	Location
HHB, 691st AAA Gp	HHB, 691st Arty Gp (Air Def)	Towson
HHB, 683d Msl Bn (Nike)	HHB, 1st Msl Bn (Nike-Ajax), 70th Arty	Baltimore
Btry A, 683d Msl Bn (Nike)	Btry A, 1st Msl Bn (Nike-Ajax), 70th Arty	Fort Smallwood
Btry B, 683d Msl Bn (Nike)	Btry B, 1st Msl Bn (Nike-Ajax), 70th Arty	Baltimore
Btry C, 683d Msl Bn (Nike)	Btry C, 1st Msl Bn (Nike-Ajax), 70th Arty	Baltimore
Btry D, 683d Msl Bn (Nike)	Btry D, 1st Msl Bn (Nike-Ajax), 70th Arty	Baltimore
HHB, 684th Msl Bn (Nike)	HHB, 2d Msl Bn (Nike-Ajax), 70th Arty	Towson
Btry A, 684th Msl Bn (Nike)	Btry A, 2d Msl Bn (Nike-Ajax), 70th Arty	Catonsville
Btry B, 684th Msl Bn (Nike)	Btry B, 2d Msl Bn (Nike-Ajax), 70th Arty	Baltimore
Btry C, 684th Msl Bn (Nike)	Btry C, 2d Msl Bn (Nike-Ajax), 70th Arty	Pikesville
Btry D, 684th Msl Bn (Nike)	Btry D, 2d Msl Bn (Nike-Ajax), 70th Arty	Towson
HHB, 686th Msl Bn (Nike-Ajax)	HHB, 3d Msl Bn (Nike-Ajax), 70th Arty	Accokeek
Btry A, 686th Msl Bn (Nike-Ajax)	Btry A, 2d Msl Bn (Nike-Ajax), 70th Arty	Accokeek
Btry B, 686th Msl Bn (Nike-Ajax)	Btry B, 3d Msl Bn (Nike-Ajax), 70th Arty	Croom Station

burg six months later.<sup>17</sup> Station changes occurred over the next two years as missile unit requirements were refined. HHB-3d Battalion transferred from Accokeek to Suitland, and D-2d Battalion from Towson to Cronhardt, in July 1959. Just over two years later, A-3d Battalion closed out Accokeek and transferred to Mattawoman (La Plata).<sup>18</sup>

In January 1961, the Army Department announced yet another phase of national air defense planning: Hercules deployment would be speeded up, and nearly 70 Ajax sites closed as a result. On March 16, 1962, Maryland made history as the first state to sign an agreement with ARADCOM for eventual takeover of four Hercules sites, with the seven Ajax sites inactivating. The overall ARADCOM plan called for 15 states to operate 48 Hercules batteries by the end of Fiscal Year 1965. Maryland Guardsmen got an early taste of the seriousness of their mission. During the October 1962 Cuban

Missile Crisis, state troops fresh from Hercules training "assisted understrength active Army units in . . . manning their sites . . ." On December 11, 1962, Maryland scored another first when Site W-26 (Annapolis-Bay Bridge) passed from A-1st-562d Artillery to Battery A (Capt. John A. Thompson)—1st-70th Artillery, in a change of command ceremony attended by Lt. Gen. William W. Dick, Jr. (ARADCOM commander) and General Reckord. W-26 had been converted to Hercules in September 1961, and Battery A was thus the first ARADCOM Guard unit to acquire Hercules.<sup>19</sup>

Because Hercules was vastly superior to Ajax, fewer sites were required; this led to a corresponding reduction in Guard air defense strength. Seventieth Artillery's 2d and 3d Battalions were reorganized and redesignated March 1, 1963, forming parts of other Army Guard units. HHB-691st Artillery Group (AD) was also reorganized



PHOTOGRAPH 1. Maryland Guardsmen of 3d-70th Artillery with Nike-Ajax, 1960.  
(U.S. Army Photo SC-576509)

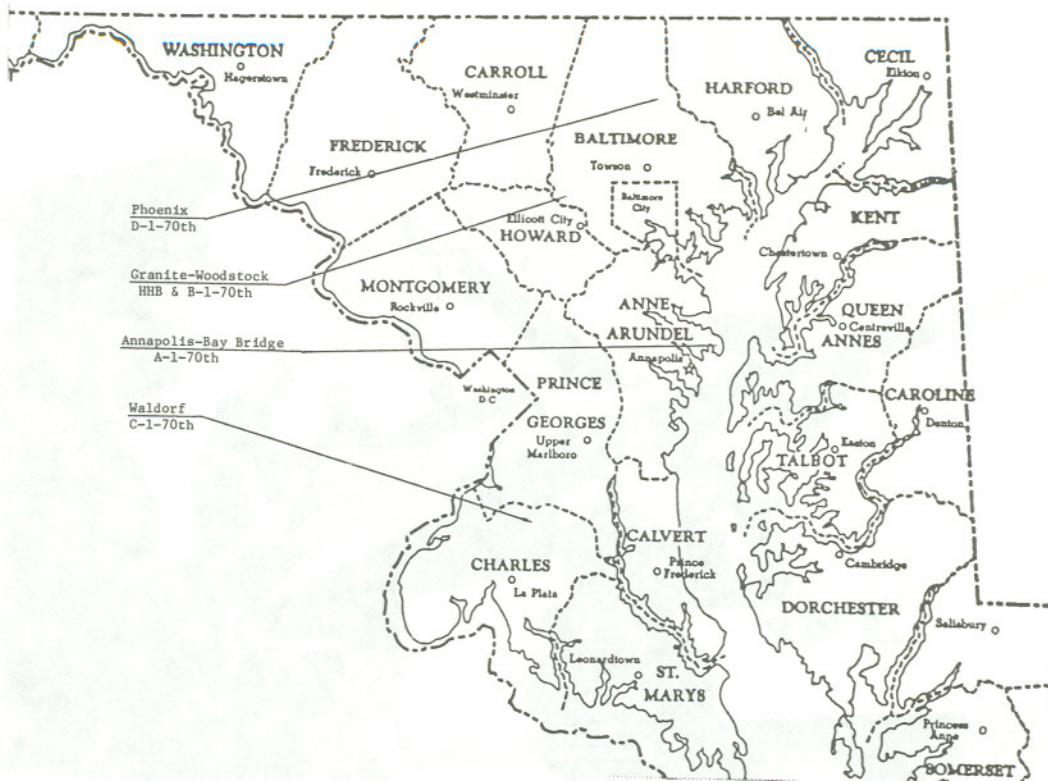
and redesignated at this time, leaving 1st Missile Battalion (Nike-Hercules)-70th Artillery as Maryland's sole air defense unit. The battalion operated sites as shown in Map 2. Effective January 1, 1966, the unit was redesignated 1st Battalion (Nike-Hercules)-70th Artillery.<sup>20</sup>

For the next five years, the Guard air defense structure remained stable. In September 1968, however, the Army Department announced a major reduction in ARADCOM strength: 23 Hercules batteries and seven headquarters were to be closed. On November 1, Site W-26 (Annapolis-Bay Bridge) was inactivated, and control of Davidsonville passed to Battery A-1st-70th Artillery. The former occupant—Battery B-4th-1st Artillery (Regular Army)—was placed in an "active less personnel and equipment" status. Among the dignitaries at the change of command ceremonies was Maj. Gen. George M. Gelston, commanding

Maryland's Army National Guard. As a lieutenant colonel, Gelston had been the first commander of 684th AAA Battalion in 1956.<sup>21</sup>

A second nationwide cutback came in 1971, this time resulting in an actual loss of battalion strength. Battery C, stationed at Waldorf, was reorganized and converted to a different type of Army Guard unit May 23. The other elements of 1st-70th Artillery were not affected. The final change before inactivation came April 1, 1972, when 70th Artillery was redesignated 70th Air Defense Artillery (ADA). Under CARS, 70th ADA continued the coat of arms and distinctive insignia of the 683d.<sup>22</sup>

The Washington-Baltimore-Norfolk Defense stood down April 1, 1974, part of the second increment of ARADCOM inactivation. At that time the defense, commanded by 23d ADA Group at Fort Meade, comprised a Regular Army battalion (4th-1st



MAP 2. Army National Guard Air Defense Sites: March 1, 1963.

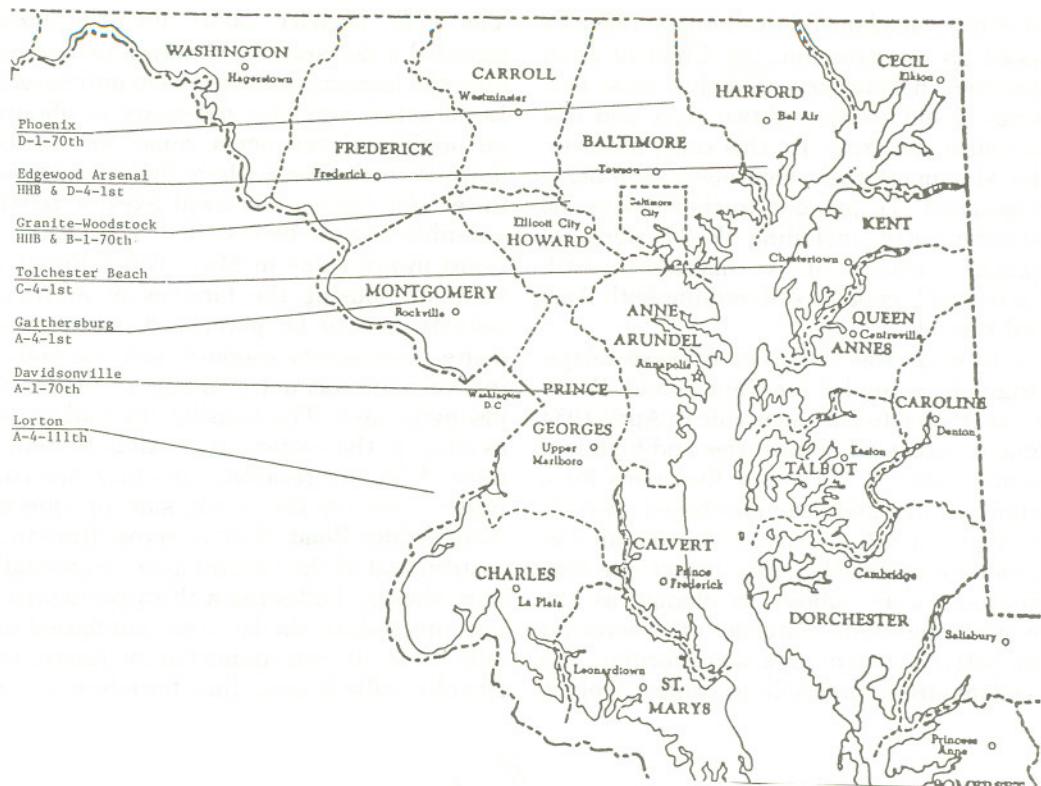
ADA) and two National Guard battalions (see Map 3). In addition to 1st-70th ADA, Virginia's 4th-111th ADA had been subordinated in the 1971 realignment, when the former Hampton Roads Defense was inactivated. HHB and two firing batteries of 4th-111th ADA joined Battery A (Lorton, Site W-64), which had always been a part of the Washington-Baltimore Defense.<sup>23</sup>

National Guard officials from 17 states gathered at Indiantown Gap Military Reservation, Pennsylvania, on September 14, 1974, to conduct a mass retirement of the colors of Guard units which had participated in the Hercules on-site program. Maryland was represented by Brig. Gen. William U. Ogletree, commanding the Army National Guard; Col. Norman A. P. Miller, State Air Defense Officer; Lt. Col. John A. Thompson, commanding 1st-70th ADA; and CW2 John N. T. Rhoads, administrative assistant to Col. Miller. An elaborate ceremony, featuring honors rendered

by Pennsylvania Army and Air National Guard units, was highlighted by formal casing of unit colors. Official inactivation of 1st-70th ADA, and withdrawal of federal recognition, came September 30, 1974. The Maryland Army National Guard's air defense mission passed into memory.<sup>24</sup>

#### SITE W-25

In April 1953, Nike-Ajax sites were given top priority in the Army military construction budget, with the objective of having battery sites in the Washington-Baltimore, New York, Chicago and Detroit Defenses ready for occupancy by December 1, 1953. Number one on the priority list was the 36th AAA Missile Battalion, Washington-Baltimore Defense. Since delays in acquiring private property were expected, initial emphasis was placed on sites on government-owned land. The battalion took up its temporary positions at Fort Meade on schedule, but encountered serious delays in moving to permanent sites, originally planned for October 1954.<sup>25</sup>



MAP 3. ARADCOM Sites in the Washington-Baltimore Defense: September 1974.

Selection of suitable battery sites, and acquisitions of land parcels thus identified, proved "major obstacles to the expeditious deployment of Nike units throughout the United States." Where possible, public lands were chosen, even though optimum defense and tactical considerations might dictate otherwise. But there was insufficient public land in the defended areas, and extensive compromise would obviously prove detrimental to the air defense program.

By far the greatest number of battery sites had to be located on privately-owned land, and in most instances, high real estate costs and adverse reaction by owners made the acquisition problems acute. Very specific and restrictive standards had to be applied to the location. The general public, not knowing the necessity for interrelationship and topographic configuration of Control and Launcher Areas to assure both an effective defense ring and the proper functioning of the weapon system within the battery, often thought that site selections

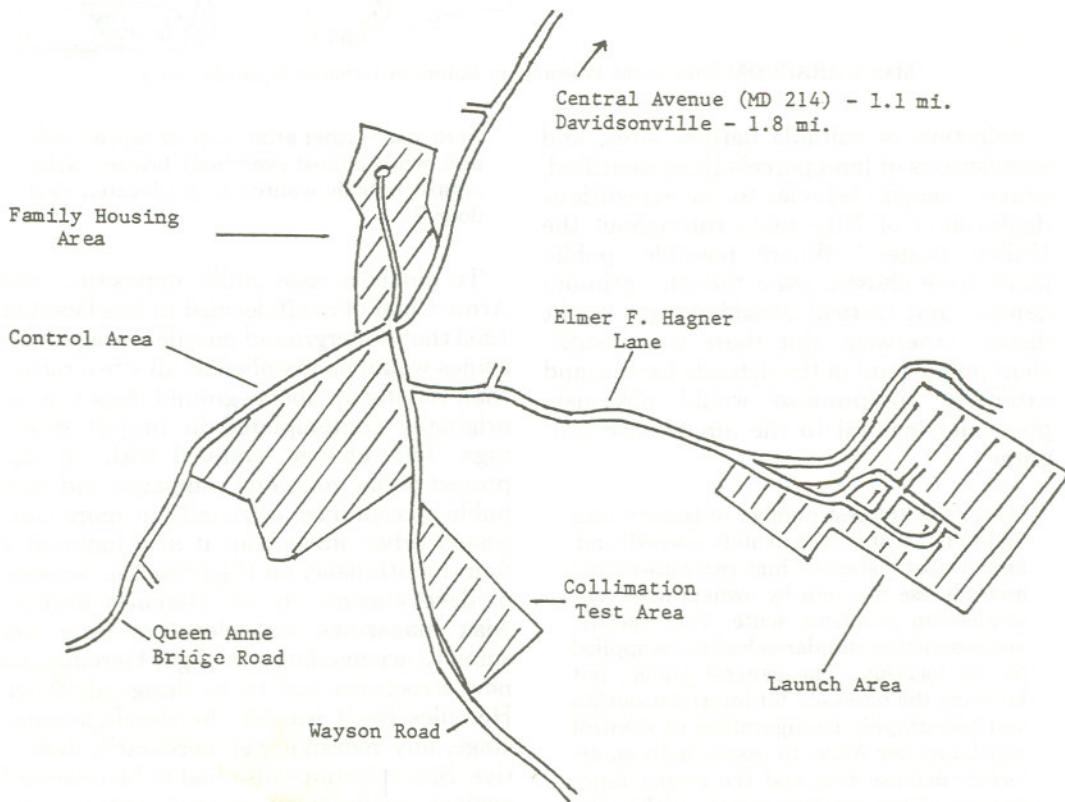
were made either arbitrarily or capriciously and, while almost everybody favored Nike, almost nobody wanted a unit located next door.<sup>26</sup>

To partially ease public opposition, the Army Chief of Staff decided in late October 1953 that underground missile storage magazines would be installed at all sites, rather than relying on above-ground dispersal, as originally contemplated in project drawings. This change, coupled with an improved public relations campaign, did ease public acceptance, especially in more congested urban areas. But it also imposed a four-month delay on the program, because of developments in the Hercules project. Ajax magazines and elevators were too small to accommodate the larger Hercules, so new structures had to be designed. Since Hercules itself was in the developmental stage, any redesign was necessarily tentative. Site selections also had to be reviewed against preliminary revised criteria, released November 20, 1953. Final drawings

were not issued until late January 1954. To speed up construction, the Chief of Staff specified in February 1954 that most batteries would consist of two Ajax and one Hercules magazine. By this time, however, the Ajax magazines themselves were being redesigned. To prevent further delays, 60 launcher sites, including W-25, were designed to consist of two magazines, both "universal" (capable of handling both Ajax and Hercules).<sup>27</sup>

Site W-25 was caught up in these delays. Originally intended for Kent Island, W-25 was switched to Davidsonville in April 1954 "due to technical deficiencies and high real estate costs . . ." Twenty-five acres for a launcher area had been purchased outright in August 1952, as part of the overall Defense site acquisition plan (exact site designations were subject to change as the program matured). Purchase of 16 acres for the battery control area was thornier, and condemnation proceedings were invoked.

The U.S. District Court for Maryland awarded a declaration of taking two years after the launcher area had been purchased. Legal action was also necessary to obtain an additional ten acres some 500 yards down Wayson Road, where the collimation tower (for testing electrical axes of radar antennae) was to be installed. The District Court award came in May 1955.<sup>28</sup> Finally, land for housing the families of married soldiers had to be purchased, since adequate "community support" (private housing for rent) was not available in the Davidsonville area. The housing site had to be as close to the battery as possible to minimize delay in recalling off-duty troops. Eight acres on the north side of Queen Anne Bridge Road, directly across from the eastern end of the control area compound, were chosen. Following a third condemnation proceeding, the land was purchased in July 1958. It was immediately leased to Davidsonville Homes, Inc., for a term of 55



MAP 4. Site W-25.

years, for construction of a 16-unit Armed Forces Housing Project.<sup>29</sup>

Thus, nearly 60 acres were acquired to fully develop the Davidsonville site. Extracting acreage for family housing, Site W-25 closely approximated the average for similar Nike installations.

The ground control guidance equipment is located in a plot of 6 to 8 acres - the Control Area - which includes, basically, three radars and a computer. The first, an acquisition or search radar, detects the approach of distant aircraft. Once a target is selected, a second or tracking radar picks it up and feeds data regarding its location and movement into the computer. The third radar, the missile tracking radar, follows the missile throughout its flight, reporting its movement to the computer. The computer instantaneously and continuously thereafter calculates the closest point of intercept between the missile and target and directs the missile toward the target.

A Launcher Area is located 1 to 4 miles away from the Control Area. It consists of approximately 42 acres, of which 15 are required for the operating facilities and the remainder as a surrounding safety zone. The principal elements contained within the Launcher Area are: underground storage magazines, launchers, missile assembly building, fueling area, control van, generators, administration and housing facilities, and appurtenant utilities. Troop housing is generally located at either the Launcher or Control Area but in some cases may be divided between the two areas.<sup>30</sup>

Bids for construction of Site W-25 were solicited in April 1954, but poor contractor performance and difficulties with elevator installation and repair delayed completion. The April 1955 revised overall deployment plan called for W-25's tactical facilities to be completed for occupancy in May, and troop housing in June, of that year. The tactical facilities were completed on schedule, and the first occupant—Battery B-36th AAA Missile Battalion—moved to its permanent site June 10, 1955.<sup>31</sup>

The standard Ajax battery table of organization and equipment (TOE) published in May 1955 called for 106 officers, warrant officers and enlisted men. This was increased to 113 men in the revised TOE (November 1957), and to 115 in August

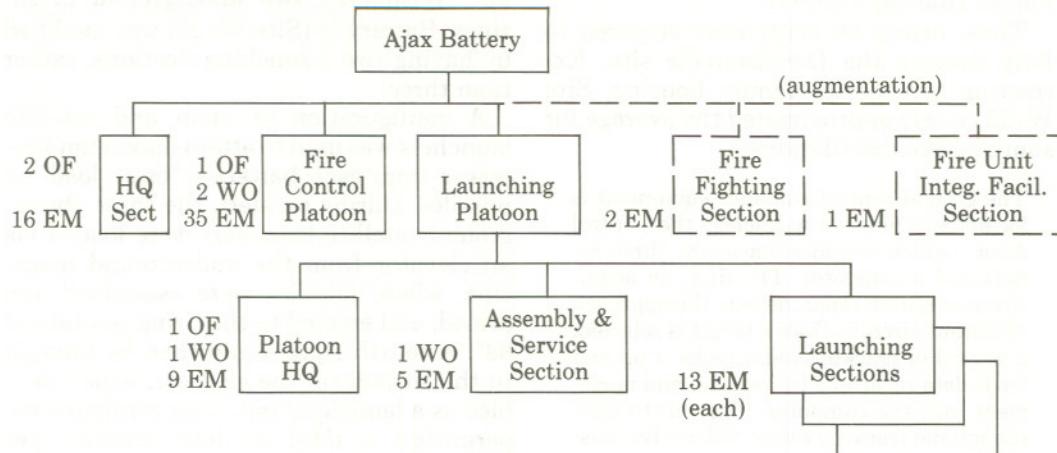
1960, the last major TOE revision (Table 2).<sup>32</sup> With only two underground magazines, Battery B (Site W-25) was modified by having two Launching Sections, rather than three.

A configuration of main and satellite launchers was used to attain maximum fire-power from each battery's "basic load" of missiles. During an alert, the three above-ground satellite launchers were loaded via an elevator from the underground magazine, where missiles were assembled and armed, and erected to the firing position of 89°. A fourth Ajax would then be brought to the surface on the elevator, which doubled as a launching rail. This configuration permitted a total of four missiles per Launching Section to be readied for firing. At BATTLE STATIONS alert status, a missile could be launched within 30 seconds of the order.<sup>33</sup>

During a fire mission the missile on the elevator-launcher of one launching section is fired, followed by the missile[s] on the elevator-launcher[s] of the [second and third sections]. Using this sequence each section can reload the elevator-launcher while the other two sections are firing, and consequently maintain the maximum rate of fire. This procedure is followed as long as missiles are available in the underground [magazines]. When these have been exhausted, the three missiles located on satellite launchers at each section are fired as desired by the [battery] commander.<sup>34</sup>

When launched, the missile's four booster rockets accelerated Ajax to supersonic speed, burned out in a few seconds, then separated and fell into a predetermined "booster disposal area." After separation, the Ajax's liquid fuel sustainer rocket ignited, maintaining supersonic speed to target intercept. The target and missile tracking radars constantly fed data to the fire control computer, which in turn transmitted in-flight correction signals to the missile. Antennae on the missile received these signals and directed them to the steering fins which maneuvered the missile into lethal proximity to an intruder aircraft. Evasive action was immediately detected and course correction signals transmitted from the control area. "This

TABLE 2. Nike-Ajax TOE (1960)



action continue[d] until the missile and the target [were] within a fraction of a second of physically colliding. The computer then [sent] a burst command to the missile, detonating the warhead containing thousands of steel fragments which engulf and destroy the target.”<sup>35</sup>

Original engineer plans called for a mobile, "primitive encampment" site environment, with prefabricated shelters, gravel-surfaced sidewalks and roads, and scant concern for overall appearance. Public opposition to the eyesore presented by early Nike sites, coupled with considerations of troop morale and equipment maintenance needs, prompted a change to permanent, fixed installations. Thus evolved the "mini-post" appearance associated with Nike sites: paved roads and walkways, conventional buildings painted in colors compatible with those of local communities, and grass, trees and flowers providing screen and shade cover. Unit morale, strained by "long, tiresome hours of troop duty" frequently in isolated areas, was boosted by constructing "good living quarters and mess halls, day rooms, hobby shops, post exchanges, and athletic facilities."<sup>36</sup>

Site W-25 saw several major changes during 1958. Battery B-36th AAA Missile Battalion was reorganized for Hercules June 20. Conversion construction, including installation of an intrusion detection system, was completed July 2, making W-25 the third operational Hercules site in

the Continental United States. On September 1, the 36th came under CARS and was redesignated 1st-562d Artillery. Battery B retained its alphabetical designation. W-25 held an "open house" three days later to celebrate these changes.<sup>37</sup>

Because W-25 already had "universal" magazines, conversion from Ajax to Hercules involved only minor additional construction: site configuration remained substantially the same. Reliance on existing Ajax sites was necessitated by the huge costs of constructing Hercules-specific sites. At best, this compromise was less than satisfactory to ARADCOM officials, because "a weapon with an 85 mile range [was] sited at locations selected . . . for a 25-mile range missile." Worse still, failure to relocate Hercules batteries meant greater vulnerability to nuclear attack, since they were kept needlessly close to primary target areas. A measure of protection was provided by constructing reinforced concrete buildings with filtered ventilation systems to reduce damage, casualties and contamination from blast overpressure and fallout. Fallout protection construction at W-25 was completed in December 1964. Troops were equipped with special clothing for nuclear-biological-chemical warfare protection. Missile Masters were also centrally located in the defense area, and thus highly vulnerable. Further, since Hercules conversion meant there would be fewer firing batteries for the



PHOTOGRAPH 2. Launch Area, Site W-25, December 5, 1956.  
(U.S. Army Photo SC-549340)

AADCP to coordinate, Missile Master carried the added onus of being "overcapable," especially in relation to maintenance and personnel costs. This was addressed by gradual substitution of smaller fire distribution systems. These were colocated with firing batteries, outside of the immediate target area, increasing survivability. For example, Missile Mentor, capable of controlling up to 16 batteries, replaced Missile Master at Fort Meade in August 1966.<sup>38</sup>

Battery B proved equal to the Hercules challenge. In 1962, under Capt. Myron W. Rose, the battery was the first recipient of the Robert W. Berry Award, given annually to ARADCOM's outstanding missile site.<sup>39</sup> On December 11, 1962, the same day A-1st-70th took control of the Annapolis-Bay Bridge site, 1st-562 was inactivated. Simultaneously, Battery B-1st-71st Artillery took over W-25. Sometime in 1963 or 1964,

Battery B was attached to 4th-1st Artillery for administrative and operational control, and subsequently redesignated B-4th-1st Artillery. Fourth-1st Artillery thereafter constituted the Regular Army component of the Washington-Baltimore Defense, and was deployed as follows: HHB and Battery C—Edgewood Arsenal, Battery A—Rockville, Battery B—Davidsonville, and Battery D—Tolchester (on Maryland's Eastern Shore).<sup>40</sup>

On August 30, 1963, Davidsonville was honored by being named the "National Nike Site." This designation imposed an additional mission of serving as a "showcase" Hercules installation for visiting national and foreign dignitaries and organizations. From 1957 through 1963, this mission had been assigned to Lorton, Virginia (Site W-64). Lorton had been a "dual site," part Hercules (Regular Army) and part

Ajax (National Guard). When the Ajax missiles were removed, the Regulars pulled out, leaving Virginia's A-1st-280th Artillery (later A-4th-111th Artillery) as sole occupant.<sup>41</sup>

Davidsonville's fame was furthered in May 1964, when Battery B took ARADCOM's Distinguished Firing Battery Award. This honor was bestowed in recognition of the unit's outstanding performance in annual service practice (ASP) firing competition. ASP, also called short notice annual practice, had been initiated in July 1961 to provide a reasonable test of battery proficiency. It will be recalled that Guard gun batteries could, for safety reasons, fire only at the Fort Miles range. Similarly, missile batteries could not practice live firing from their sites. This constraint was overcome by requiring each ARADCOM firing battery to travel to the McGregor Range at Fort Bliss, on only 48-hour notice. Once on-range, the units had to set up equipment, draw, assemble, emplace and fire assigned missiles within one week. All on-site batteries fired at least once annually, and ten percent would have to fire a second time during the fiscal year. Batteries were selected at random, so battery commanders never knew when their turn would come, and last minute "cramming" was not feasible. Units therefore had to maintain a high state of readiness at all times. Competition for annual high score was intense, and ARADCOM expressed pleasure at the overall results. ASP was discontinued only upon announcement of ARADCOM's inactivation.<sup>42</sup>

In addition to ASP, firing units were tested on-site through scheduled and no-notice BLAZING SKIES alerts. These came as often as once a week. Any aircraft entering a defense might be designated an intruder, and firing drill completed short of actual launch. Air Force Strategic Air Command (SAC) and Aerospace Defense Command (ADC) periodically provided "faker" aircraft, simulating intruders for battery training under intense electronic warfare conditions. SAC combat crews benefited by being scored on target run and evasion techniques. Nationwide SKY SHIELD and regional training exercises were also held.

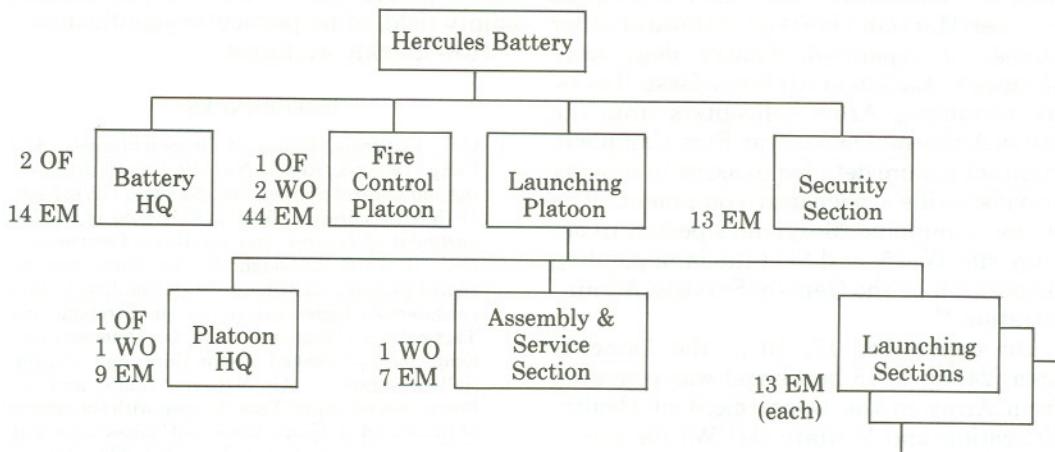
When aircraft were not available, simulators were used to project electronic "targets."<sup>43</sup>

Ajax and Hercules batteries were basically similar in both configuration and organization, as a comparison of Tables 2 and 3 will reveal. With a total of 134 men, the 1967 standard Hercules TOE most notably lacked Fire Fighting and Fire Unit Integration Facility sections. This resulted from increased safety due to absence of volatile liquid fuel, and advanced electronic capability of the Hercules. A Security Section was added for Hercules because of the presence of nuclear warheads, which imposed stricter security standards. Nuclear storage areas were isolated from the rest of the battery and fenced off. Beginning in June 1958, Military Police sentry dog teams were assigned to Hercules batteries, with four handler/dog teams per Security Section. Nike site duty was found, however, to unduly restrict the career advancement of Military Policemen, so handler slots were later converted for missile crewmen.<sup>44</sup>

Hercules batteries were initially allotted a basic load of 12 missiles, raised to 18 in 1964. However, limited on-site storage capacity meant some of the additional missiles had to be stored at Army depots. Further, not all of the added increment carried nuclear warheads. When sites had the required storage, a limited number of Hercules with high-explosive warheads were stocked "as an added measure of defense against a Soviet U-2 type incursion . . ."<sup>45</sup>

Maryland's A-1st-70th Artillery had been reduced from 138 men to 126 while manning Hercules at Site W-26. This was accomplished by eliminating one Launching Section, leaving two in the platoon. Upon displacing B-4th-1st Artillery at Davidsonville in November 1968, the Guard battery's authorized strength was cut further, to 124 men (including 33 Mobilization Designee slots). This reduction was permitted because a high power acquisition radar (HIPAR) had been installed at Site W-25 in October 1962. HIPAR, like the alternate battery acquisition radar (ABAR) which the unit had operated at Annapolis, enhanced battery efficiency by gaining more time for decision-making and

TABLE 3. Nike-Hercules TOE (1967)



weapon selection before engagement. Standard Hercules radars acquired targets at a maximum range of 125 nautical miles and transferred to target tracking radars at 100 nautical miles. Missiles could be launched at 98 nautical miles and intercept at 70 nautical miles. Against an intruder flying at Mach 1 at 11 miles altitude, elapsed time from acquisition to intercept was 305 seconds. By extending acquisition range to 175 nautical miles, HIPAR allowed more than 400 seconds from acquisition to intercept. In a supersonic, computer-paced electronic warfare environment, these added seconds eased the battery commander's task. HIPAR and associated control equipment could also be modified to provide a limited defense against submarine-launched ballistic missiles, increasingly prevalent in the Soviet offensive inventory. To accommodate HIPAR, two of Battery A's augmentation sections (including ABAR), totaling 11 men, were eliminated and a 9-man HIPAR Section added.<sup>46</sup>

A small Regular Army contingent remained at Davidsonville after A-1st-70th Artillery took over. This was the nuclear custodial team, which controlled release of nuclear warheads for fitting to Hercules. Under the Atomic Energy Act of 1954, National Guard air defense units were denied custody of nuclear weapons prior to federalization. Nuclear warheads were delivered to Hercules sites either by helicopter or on

tractor-trailers under heavy Military Police escort. While Guardsmen had periodically rebuilt conventional high-explosive warheads, the nuclear variety had to be shipped to the Army ordnance depot at Redstone Arsenal, Alabama, for maintenance. Actual use of nuclear warheads in a combat situation was controlled by AADCP orders, using classified "Weapon Control Case" terminology.<sup>47</sup>

Battery A came to Davidsonville with freshly won honors. In 1968, Captain Thompson's unit garnered three proficiency awards: 35th Artillery Brigade Certificate of Operational Readiness, 1st-70th Artillery's Carl W. Schmidt Honor Battery Trophy, and the battalion's Col. Norman A. P. Miller Operational Readiness Trophy. Battery A's guidon was decorated with an ARADCOM "E" streamer for combat proficiency excellence in 1971. That same year, the unit attained an outstanding score during a command maintenance management inspection. Two years later, under Capt. Donald S. Bowes, Battery A won a second "E" streamer, and scored 98.3 percent in ASP competition.<sup>48</sup>

Davidsonville's solid reputation was thus thoroughly intact when word came to initiate stand-down procedures. Missile components and fire control equipment were shipped to various Army depots to be reconditioned and issued to United States and allied forces still operational with Her-

cules. Regulars received new duty station orders. Guardsmen were either reassigned to other Maryland units or to those of other states, or separated. Sentry dogs were shipped to Lackland Air Force Base, Texas, for retraining. Army helicopters from the 101st Airborne Division at Fort Campbell, Kentucky, were detailed to assist in moving Davidsonville's packaged equipment. The Army terminated Maryland's permit to occupy site W-25, and held the land pending disposition by the General Services Administration.<sup>49</sup>

On September 17, 1975, the launcher area (24 acres, 15 buildings) was conveyed from Army to the Department of Health, Education and Welfare (HEW) for use as an educational facility. HEW's regional director signed a quitclaim deed January 19, and Anne Arundel County's acting executive accepted the property February 23. The property was formally acquired March 4, 1976, as a county police academy. The control area (16 acres, 13 buildings) was conveyed to the Department of Interior April 15, 1976, for use as a recreational area. Interior's regional director signed a quitclaim deed June 24, and the property was accepted by the county executive six days later, with formal acquisition coming July 7. An additional 33 acres of easements were transferred to GSA and placed in inactive inventory October 27, 1976. GSA closed its books on the former Nike site November 16, 1977.<sup>50</sup>

The family housing area across Queen Anne Bridge Road had been surplus to AR-ADCOM needs since Guardsmen took over Site W-25. Air Force personnel assigned to the transmitter station just off Route 424 occupied the units after Army families vacated. The Army later planned to dispose of this property, which would have caused eviction of the Air Force families. But the Air Force decided to acquire and renovate the housing units in December 1973, and evictions were averted. Formal transfer came October 30, 1974. The family housing area is the only portion of the original Nike site still in use by a military service.<sup>51</sup>

As of this writing, the old collimation test site is still listed as a property of the "Nike Base, U.S. Army" in county land

records, and is still undeveloped.<sup>52</sup> To the casual passer-by, it looks like just another empty field, of no particular significance.

How quickly we forget.

#### REFERENCES

1. U.S., Congress, House of Representatives, 81st Cong., 1st Sess., Report No. 159, *Radar Air Warning and Control System*, Feb. 24, 1949, 1-2, 6; Dept. of Defense Directive 5100.1, *Functions of the Department of Defense and Its Major Components*, Dec. 31, 1958. Although the Air Force was assigned primary air defense responsibility, it gave considerably higher priority to the Strategic and Tactical Air Commands. The Air Defense Command mission ranked a poor third, and was initially assigned to Air National Guard and Air Force Reserve units. This changed with the advent of the Soviet A-bomb, when SAC bases were seen to be threatened. Joseph T. Jockel, "The United States and Canadian Efforts at Continental Air Defense, 1945-1957," (Ph.D. diss., Johns Hopkins U., 1978), 25-6, 29, 98-9. The Soviet A-bomb explosion also gave sudden impetus to the proposed "radar fence" program. Jockel, 40-1.
2. Dept. of Defense Directive 5100.1, *Functions of the Department of Defense and Its Major Components*, Dec. 31, 1958.
3. U.S. Army Air Defense Command *Argus* 5:7 (July 1962), 8-9, 16:12 (Dec. 1973), 5-7, and 17:6 (June 1974), 3-13 (cited hereafter as *Argus*); Maj. Gen. Willard W. Irvine, "The Army's Role in Air Defense," *Army Information Digest* 7:4 (Apr. 1952), 14-9; Lt. Gen. S[tanley] R. Mickelsen, "Sentry of the Skies," *Army Information Digest* 11:3 (Mar. 1956), 4-5; Dept. of the Army Field Manual 44-1, *U.S. Army Air Defense Employment*, Washington, D.C., Feb. 25, 1964, 22 (cited hereafter as FM 44-1). Russia's first intercontinental bomber, the Tu-4 Bull, became operational in 1947. Copied from U.S. B-29's force-landed in Russia during the war, it was capable of one-way missions only, and had limited destructive potential without A-bombs. Russia unveiled its first jet intercontinental bombers (Tu-16 Badger and Mya-14 Bison) in May 1954, followed by the Tu-20 Bear a year later. These aircraft outclassed existing Air Force interceptors. Jockel, 17-8, 32, 163.
4. Ted G. Nicholas, *U.S. Missile Data Book, 1981*, 5th ed., Data Search Associates, Inc. (Fountain Valley, CA, 1980), 3-2, 3-4, (cited by permission); U.S. Army Ordnance School, *Handbook of Ordnance Materiel, Special Text 9-159* (Aberdeen Proving Ground, MD, 1962), 102 (cited hereafter as *Handbook of Ordnance Materiel*); FM 44-1, 6; *Argus* 5:7 (July 1962), 8 and 17:6 (June 1974), 6, 11-2; Lt. Col. C. P. Rountree, "Missiles Meet Their Master," *Army Information Digest* 16:3 (Mar. 1954), 5.
5. *Argus* 17:6 (June 1974), 3, 6, 11.
6. *Ibid.*, 6; *Argus* 5:7 (July 1962), 8-9; *Command Analysis, U.S. Army Air Defense Command*, June 1963, 3-4, 10-1, and *Command Analysis, U.S. Army Air Defense Command*, May 1965, 11 (both

works cited hereafter as *Command Analysis*); FM 44-1, 9-11, 19-26, 28-9; Rountree, 6-8; Nicholas, 3-2; "History of the 35th Artillery Brigade (AD)," N. P., N. D., copy on file at U.S. Army Military History Research Collection (USAMHRC), Carlisle Barracks, PA (cited hereafter as "History ... 35th Arty Bde"). Relationships between the Army and Air Force were frequently strained by inter-service struggles for total control of the CONUS air defense mission. For a summary, see Johnathan Carmen, "The Air Defense Muddle," *Army* 7:7 (Feb. 1957), 43-5. See also *New York Times*, May 21, 1956, and *Army Times*, May 30, 1959. Although Canada deployed the area-defense Bomarc, it rejected Nike. Jockel (206) cites a June 1956 speech by C. D. Howe, Minister of Defense Production, in the Canadian House of Commons: "We have not the large centers of population that are adapted to protection by the Nike. The Nike is a very expensive weapon, calling for a very expensive installation. To warrant that there must be a considerable concentration of population."

7. Nicholas, 3-2, 3-4; FM 44-1, 6; Michael J. H. Taylor, *Missiles of the World* (New York, 1980), 74; *Handbook of Ordnance Materiel*, 117, 119; "History ... 35th Arty Bde;" *Argus* 5:7 (July 1962), 8 and 17:6 (June 1974), 6, 12.
8. *Argus* 16:7 (July 1973), 13, 29, 17:2 (Feb. 1974), 2-3, 17:5 (May 1974), 9, and 17:6 (June 1974), 7, 9-10, 12, 22-3; "Scraping Missiles to Fit the Times," *U.S. News and World Report* 76:42 (Mar. 4, 1974), 42; *Annual Report of the Chief, National Guard Bureau, Fiscal Year 1974* (Washington, D.C., 1974), 143. In March 1970, the 31st ADA Brigade had been assigned a Strategic Army Forces mission in addition to its CONUS air defense role. This meant the brigade, which was equipped mainly with Hawk missiles, was designated for deployment to provide air defense for Army intervention forces, anywhere in the world. The continued cutback in Hercules units is evident from annual totals: 1963 - 134, 1966 - 112, 1968 - 87, 1969 - 82, 1970 - 76, 1971 - 52. *Argus* 17:6 (June 1974), 12. See also Col. Bruce Jacobs, "A Farewell Salute," *National Guardsman* 28:10 (Nov. 1974), 2-8, charts 1 and 2.
9. Maxwell D. Taylor, *The Uncertain Trumpet* (New York, 1960), 67-9, 97-8, 103-4, 132, 149, 158-61; *Command Analysis ... June 1963*, 1, 16-8; *Command Analysis ... May 1965*, 1, 69; Col. John G. Zierdt, "Nike-Zeus: Our Developing Missile Killer," *Army Information Digest* 15:12 (Dec. 1960), 2-11; *Argus* 17:2 (Feb. 1974), 2-3 and 17:6 (June 1974), 9-10; Roger D. Speed, *Strategic Deterrence in the 1980s*, Hoover Institute Pub. 214, 3d printing (Stanford, CA, 1982), 29, 51-6, 69-70, 74, 85; Edgar O'Ballance, *The Wars in Vietnam, 1954-1973* (New York, 1975), 80, 82-3, 88-9, 103, 136, 170-1, 183. American and South Vietnamese pilots consistently suffered heavier losses from AAA batteries than from Soviet SAM-2 missiles in air raids over North Vietnam. O'Ballance states that in the North Vietnamese air defense system, "SAMs were used primarily to force the attacking aircraft to fly low to avoid them, which made [the aircraft] more vulnerable to ground antiaircraft fire that accounted for the majority of the US and SVN aircraft losses. The general deduction in this, the first war in which [air defense] missiles had been used extensively, is that they were far less effective against ... aircraft ... than had been predicted or expected. The ECM [electronic countermeasures] pods and low-flying had largely nullified their deadliness, while that of conventional antiaircraft guns had been underestimated and underrated" (103). See also James F. Dunnigan, *How to Make War: A Comprehensive Guide to Modern Warfare* (New York, 1982), 121, 125.
10. *Argus* 17:2 (Feb. 1974), 2.
11. "History ... 35th Arty Bde;" "35th AAA Brigade 14th Anniversary, 20 Nov 1942-1956," unit publication (Ft. Meade, MD, 1956); summary notes, 36th AAA Missile Bn, "A. A. P.," U.S. Army Center of Military History (USACMH), Washington, D.C., Apr. 27, 1964; *Argus* 16:7 (July 1973), 13, 29 and 17:6 (June 1974), 7, 22, 23.
12. Lineage and Honors, 70th Artillery, USACMH, Sep. 22, 1966 (cited hereafter as Lineage Statement); *Baltimore Evening Sun*, Nov. 9, 1955, Nov. 17, 1955, Jan. 13, 1957, and Oct. 18, 1957; U.S. Army, Office of the Adjutant General, *Directory and Station List of the United States Army*, Dec. 31, 1953, 70-9, Dec. 31, 1954, 70-80, Feb. 28, 1955, 70-80, and Dec. 15, 1956, 64-77 (cited hereafter as *Station List*); Letter from Chief, Heraldic Services Div., Quartermaster Activities, to Chief, National Guard Bureau (NGB), Depts. of the Army and the Air Force, "Coat of Arms and Distinctive Insignia for the 683d Antiaircraft Artillery Battalion, Maryland National Guard," Mar. 7, 1958. The 683d's distinctive insignia consisted of the shield and motto from the coat of arms, described thus: "The scarlet and gold [colors] are used for Artillery. The five-pointed [black] figure represents the 'Star Fort,' Fort McHenry, early defense of the city of Baltimore against hostile attack. The black and gold lower part of the shield is taken from the arms of Calvert, Lord Baltimore. The design refers to the battalion's place of activation and home station of Baltimore, Maryland." The motto, "O'er the Rampart We Watch," alludes to the National anthem inspired by the British bombardment of Ft. McHenry, Sep. 14, 1814.
13. *Baltimore Evening Sun*, as cited above; *Baltimore Sun*, Nov. 11, 1955; *Army Information Digest* 9:11 (Nov. 1954), 62-3; John Quick, *Dictionary of Weapons and Military Terms* (New York, 1973), 467.
14. *Baltimore Evening Sun*, Oct. 18, 1957; "Unit History of Battery D, 54th AAA Missile Battalion, Fork, Maryland," N.P., N.D., copy on file at USACMH; *Argus* 5:7 (July 1962), 8-9, 16:12 (Dec. 1973), 5-6, and 17:6 (June 1974), 6.
15. *Baltimore Sun*, July 31, 1958; Letter from Chief, Army Div., NGB to Adjutant General of Maryland (AG MD), "Troop Allotment, Conversion, Redesignation, Reorganization and Withdrawal of Federal Recognition, Army National Guard Units," Jan. 22, 1958. DC Guard AAA units are discussed in letter from Chief, Army Div., NGB to Com-

manding General (CG), DC NG, "Troop Allotment, Redesignation and Reorganization, Army National Guard Units," Feb. 13, 1958. See also Washington *Sunday Star Magazine*, May 12, 1957. Virginia's 125th AAA Bn (90mm Gun) was redesignated a Nike battalion in Feb. 1958, then as 1st Missile Bn (Nike-Ajax), 280th Arty in May 1959. Further consolidations reduced the battalion to a single battery within 4th-111th Artillery by May 1964. This Battery A had been located at Lorton, VA, since 1957, and was the only VA Guard unit involved in the Washington-Baltimore Defense after 1969. Batteries B and C, 4th-111th were active in the Hampton Roads Defense and continued after the 1971 merger which created the Washington-Baltimore-Norfolk Defense. *Argus* 12:3 (Mar. 1969), 26 and 14:6 (July 1971), 6; Letters from Chief, Army Div., NGB to AG VA: "Troop Allotment, Redesignation and Reorganization, Army National Guard Units," Feb. 14, 1958; NGB Reorganization Authority (RA) No. 66-59, May 15, 1959; NGB RA No. 9-63, Jan. 15, 1963; "125th AAA Bn (1951-Present)," work sheet, USACMH, N. D. Both the DC and VA Guard units had been equipped with 90-mm. and 120-mm. guns prior to conversion to Ajax.

16. Letters from Chief, Army Div., NGB to AG MD: "Change of Station, Army National Guard Unit," Feb. 6, 1958, Mar. 25, 1958, and Jan. 7, 1959; NGB RA No. 14-59, Feb. 12, 1959, with Change 1 - Feb. 25, 1959, Change 3 - Apr. 14, 1959, Change 4 - May 27, 1959, and Change 5 - Feb. 13, 1961; NGB RA No. 69-59, June 3, 1959; Lineage Statement, 70th Arty; MD AG, *Unit and Station List - Maryland Army and Air National Guard*, July 1, 1959 (Baltimore); Lt. Col. John A. Thompson, MDARNG, Sep. 20, 1982, and April 1983. CARS, approved by the Secretary of the Army Jan. 24, 1957, was developed "to maintain the continuity of the Army's distinguished combat units" in the face of past and planned organizational instability. Based on the British regimental system, CARS overcame these problems and established a basis for meeting future reorganization needs. "Combat arms" - infantry, armor, artillery and cavalry - in the Regular Army, Army Reserve and Army National Guard components, were effected by the plan, which prompted a series of unit consolidations and redesignations, with less historic units being inactivated. Under CARS, all elements trace their lineage back to an organic company of a "parent regiment." "Parents" are shared by Regular and Reserve units, while National Guard units (except for Special Forces) have their own "parents" based on a geographical association. A CARS "parent" is "institutional," not tactical: no regimental headquarters exists, and battalions "assigned" to the regiment for lineage and honors purposes exist separately or subordinate to other tactical/administrative units such as brigades or groups. John K. Mahon and Romana Danysh, *Infantry, Part I: Regular Army*, Army Lineage Series (Washington, D.C., 1972), 89, 96-100; Mary Lee Stubbs and Stanley Russell Connor, *Armor-Cavalry, Part I: Regular Army and Army Reserve*, Army Lineage Series (Washington, D.C., 1969), 80-1; Monte Bourjaily, Jr., "The Question of CARS," *Army* 11:12 (July 1961), 23. The CARS "parents" for air defense artillery were assigned lineages and honors of antiaircraft units of the former Coast Artillery Corps, which had been merged with Field Artillery by the Army Organization Act of 1950 (PL 581-81) to form a single Artillery branch. Lt. Col. C. Emery Baya, "Army Organization Act of 1950," *Army Information Digest* 5:8 (Aug. 1950), 28, 35, 36-7. For reorganization of DC Guard missile battalions, see NGB RA No. 13-59, Feb. 12, 1959. Elements of the two battalions and HHB-260th AAA Group were converted into Engineer and Military Police units.

17. Baltimore *Sun*, Sep. 21, 1959; *Argus* 11:11 (Nov. 1968), 19.

18. NGB RA No. 126-59, Aug. 26, 1959; NGB RA No. 14-59, Change 5, Feb. 13, 1961; NGB RA No. 267-61, Nov. 13, 1961; Lineage Statement, 70th Arty.

19. "Index-Completed Military Contracts as of 29 February 1972," Construction Div., Baltimore Dist., Corps of Engineers, 52 (cited hereafter as "Completed Military Contracts;" *Annual Report of the Chief, National Guard Bureau, Fiscal Year 1963* (Washington, D.C., 1963), 40; Baltimore *Sun*, Mar. 10, 1972; *Station List*, Dec. 17, 1962, 80; *Argus* 5:7 (July 1962), 9, 6:1 (Jan. 1963), 1, 2, 11:12 (Dec. 1968), 23, 15:1 (Jan. 1972), 6, 16:12 (Dec. 1973), 6, and 17:6 (June 1974), 6-7, 22. Other states initially participating in the Hercules on-site program were California, Connecticut, Illinois, Massachusetts, Michigan, Missouri, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Texas, Virginia, Washington and Wisconsin. Six sites in Hawaii were also manned by Guard units, but were not under ARADCOM.

20. Lineage Statement, 70th Arty; "Status, 70th Arty, 1 March 1963," working notes, R. L. Thompson, USACMH, Apr. 18, 1966; NGB RA No. 41-63, Feb. 27, 1963; NGB RA No. 25-65, Apr. 19, 1965; NGB RA No. 170-65, Dec. 20, 1965. At the time of this reorganization, batteries of the 2d and 3d Battalions were redesignated part of 1st Battalion to preserve their lineage in an active status: B-1st was formerly A-2d; C-1st, formerly B-3d; and D-1st, formerly D-2d. "Flow Chart for Elements of 70th Air Defense Artillery," work sheet, USACMH, N. D. [1974?].

21. Annapolis *Evening Capital*, Nov. 2, 1968; NGB RA No. 138-68, Sep. 23, 1968; *Argus* 11:9 (Sep. 1968), 3, 12:1 (Jan. 1969), 2, and 17:6 (June 1974), 7, 22. The Annapolis site was closed due to construction of the second span of the Bay Bridge, which was masking the acquisition radar, as verified by Air Force test flights (Lt. Col. Thompson, Sept. 20, 1982).

22. See Note 16 regarding CARS and Artillery branch. On Dec. 1, 1968, air defense units were separated from Artillery to form a new "Air Defense Artillery" branch; the remaining units were assigned to "Field Artillery" branch. Designation of Regular Army units was changed accordingly Sep. 1, 1971. Air Defense Artillery retained the then-

current Artillery branch insignia: crossed cannon surmounted by a missile. Field Artillery reverted to the simple cross cannon design. Both branches share the color scarlet, long associated with artillery. *Argus* 11:12 (Dec. 1968), 18, 12:1 (Jan. 1969), 15, 12:3 (Mar. 1969), 18, 14:8 (Sep.-Oct. 1971), 15, 18, 20, 22 and 17:6 (June 1974), 9; Lineage Statement, 70th ADA, USACMH, Sep. 10, 1973; Letter from Director, U.S. Army Institute of Heraldry to Commanding Officer, 70th ADA, "Coat of Arms and Distinctive Insignia for the 70th Air Defense Artillery, Allotted to the Maryland Army National Guard," July 1, 1972; "Flow Chart for Elements of the 70th Air Defense Artillery," work sheet, USACMH, N. D. [1974?].

23. *Argus* 14:6 (July 1971), 6 and 16:7 (July 1973), 13; *Annual Report of the Chief, National Guard Bureau, Fiscal Year 1974*, 143, 144; U.S. Army Command Information Unit, *Spotlight*, Issue No. 67, Washington, D.C., Mar. 15, 1974.

24. NGB RA Nos. 162-74 and 172-74, Nov. 7, 1974; NGB, Project Hercules Staff, "Missile Age Minutemen: A Salute Honoring the Army National Guard Air Defense Units, 1954-1974, Indiantown Gap Military Reservation, Annville, Pennsylvania, 14 September 1974," (Washington, D.C., 1974); *Free State Guardian* 4:3 (Fall 1974), 1; Jacobs. Of the 17 state Guards represented at the Indiantown Gap ceremony, one (Hawaii) had not been part of ARADCOM and six (Connecticut, Missouri, Ohio, Rhode Island, Texas, Wisconsin) had been deleted from ARADCOM's force structure in earlier years. *Argus* 16:12 (Dec. 1973), 6-7. The DC Guard was not represented.

When HHB-691st Artillery Group (AD) ceased to exist in 1963, the State Air Defense Officer became a special staff officer to the Adjutant General. In this capacity, the SADO was the senior AD advisor, controlled allocation of funds to state AD battalions and performed liaison with all ARADCOM echelons (Lt. Col. Thompson, April 1983).

25. Comment (CMT) 1, Disposition Form (DF), Asst. Chief of Staff, (ACS), G-4, to Chief of Engineers (COE), "Construction Order No. 29-Sam [sic] On-Site Construction," Apr. 1, 1953; Enclosure to CMT 1, DF, ACS, G-3, to ACS, G-1, *et al.*, "Nike Deployment and Site Availability Plan," Apr. 21, 1954. Both documents are in file "Nike Progress Reports," Historical Div., OCE (hereafter HD-OCE).

26. Col. Steven Malevich, "Nike Deployment," *Military Engineer* 47:320 (Nov.-Dec. 1955), 419; Mickelsen, 11.

27. Malevich, 418, 419, 420; Mickelsen, 11; K. Dodd, draft manuscript, 228-40, 244-6, in file "Nike Manuscript," HD-OCE; Undated [1960?], untitled list of battery sites in Washington-Baltimore Defense, in file "Lists and Info Nike Sites," HD-OCE.

28. CMT 2, DF, COE to ACS, G-4, "Control Area, Site W-25", Mar. 30, 1954; Letter, Asst. for Army Construction, Military Construction, OCE to North Atlantic Div. Engineer, "Nike Site W-25," Apr. 12, 1954. Both documents are in file "Nike Progress Reports," HD-OCE; "Real Estate Planning Report - Proposed Surface to Air Missiles Sites, Washington-Baltimore Defense Area," 4-5, N. D. [1953?], in file "Planning - Nike," HD-OCE. For COE position on acquiring land by condemnation without prior negotiation with the owner if required, see Summary Sheet, ACS, G-4, to Chief of Staff and Under Secretary of the Army, "Plan to Expedite the Acquisition of Surface-to-Air Missile (NIKE) Sites," Mar. 20, 1953, in file "Planning - Nike," HD-OCE; Land Records of Anne Arundel County, MD: J. H. H. 852/436, Aug. 6, 1952; J. H. H. 871/497, Aug. 6, 1954; and G. T. C. 948/155, May 16, 1955.

29. Land Records of Anne Arundel County, MD: G. T. C. 1220/579, July 21, 1958; G. T. C. 1222/558, July 21, 1958; *Army Times*, May 23, 1959.

30. Malevich, 417; Mickelsen, 7. Battery control and launching area separation distance requirements for Nike-Hercules are given in Dept. of the Army Field Manual 44-82, *Procedures and Drills for Nike Hercules Systems*, Washington, D.C., Aug. 30, 1965, 29, 33. Equipment design required a minimum distance of 1,000 yards and a maximum of 6,000 yards between the target-tracking radar and a missile to be launched. This source will be cited hereafter as FM 44-82. Change 1, issued Sep. 16, 1966, retitled the manual *Procedures and Drill for Nike Hercules Missile Battery*. Reference to the Change will be cited as FM 44-82 (Change 1).

31. DF, COE to Chief, Legislative Liaison, "Report of NIKE Sites Advertised," Apr. 12, 1954, in file "Nike Progress Reports," HD-COE; Enclosure to DF, Dep. Chief of Staff (DCS), Logistics to COE, "Proposed NIKE Deployment and Site Availability Plan," Apr. 6, 1955, in file "Planning - Nike," HD-OCE; "Completed Military Contracts," 49; Unit History Card, 36th AAA Missile Bn, on file with Organization History Br., USACMH.

32. Dept. of the Army, Table of Organization and Equipment [cited hereafter as TOE] No. 44-447R, Antiaircraft Artillery Missile Battery, Nike, Continental, Washington, D.C., May 13, 1955; TOE No. 44-447D, Nov. 13, 1957; and TOE No. 44-447E, Aug. 22, 1960.

33. Malevich, 417, 419; FM 44-82, 79; *Handbook of Ordnance Materiel*, 103, 121.

34. Maj. Gen. Earl G. Wheeler, "Missiles on the Firing Line," *Army Information Digest* 11:12 (Dec. 1956), 39.

35. Mickelsen, 6-7; Wheeler, 38; Rountree, 8. Hercules booster disposal areas were centered 1.2 miles from the launching area. FM 44-82, 33. Detailed procedures for Hercules launch, which were almost identical to Ajax, are found in FM 44-82, 105-34.

36. Malevich, 419, 420; Mickelsen, 9. Ironically, ARADCOM later requested that several CONUS Hercules batteries be made mobile "to prevent targetting and [facilitate] post-attack redeployment ... to reconstitute the defense or create a new defense." *Command Analysis ... June 1963*, 17.

37. Unit History Cards, 36th AAA Missile Bn, and 1st-562d Arty, USACMH; *Station List*, Apr. 15,

1962, 78; "Completed Military Contracts," 51; Undated [1962?] list, "Appendix D, Table I, (C) Converted Defense Sites (U)," in file "Lists and Info - Nike Sites," HD-OCE; U.S. Army Photographs C-015064 through C-015067. Batteries C-03 (Chicago) and NY-49 (New York) became operational with Hercules two days and one day prior to W-25, respectively.

38. "History ... 35th Bde; "Command Analysis ... June 1963, 8-9, 11-2, 15-6; *Command Analysis ... May 1965*, 57, 59; CMT 2, DF, COE to DCS, Operations, "Problems Involved in Introducing Atomic Warheads in NIKE-HERCULES (S)," Feb. 11, 1957, in file "Planning - Nike," HD-OCE; Briefing Paper, "Storage and Construction Considerations," in file "Nike Progress Reports," HD-OCE; "Completed Military Contracts," 53.

39. *Argus* 5:7 (July 1962), 9, 15:7 (July 1972), 20, and 17:6 (June 1974), 6, 11-2.

40. *Argus* 17:6 (June 1974), 13. The Unit Record Card and lineage file on 1st-71st Arty is incomplete regarding the exact fate of the battalion and its organic batteries. The sequence in the text is a reconstruction based on "Unit Historical Summary, 4th Bn, 1st Arty," N. P., N. D. [1966?] on file at USACMH (cited hereafter as "Unit Historical Summary ... 4th Bn"). USACMH officials indicate, however, that such battery-level redesignation would be unusual under CARS.

41. *Argus* 6:10 (Oct. 1963), 1-2, and 8:7 (July 1965), 5.

42. "Unit Historical Summary ... 4th Bn; " *Argus* 5:7 (July 1962), 9 and 17:2 (Feb. 1974), 2; *Command Analysis ... June 1963*, 8; Rountree, 11.

43. *Command Analysis ... June 1963*, 7-8; FM 44-82 (Change 1), 103-4; Lt. Col Thompson, Sep. 20, 1982; *Argus* 16:8 (Aug. 1973), 4 and 17:3 (Mar. 1974), 7. Electronic warfare aspects of Nike operations are discussed in FM 44-82, 159-65.

44. TOE No. 44-547 (Nike-Hercules ADA Battery, CONUS), Aug. 31, 1967; *Argus* 5:7 (July 1962), 8; *Command Analysis ... June 1963*, 13-4. Detailed descriptions of Hercules battery equipment and operations are in FM 44-82, 5-10, 11-13. Area lighting and a nuclear warhead building were installed at W-25 during 1959, along with other site and facility improvements. "Completed Military Contracts," 51-2. Nuclear warheads were not stored above ground, but were mated to missiles in the warhead building and the complete round immediately stored in an underground magazine (Lt. Col. Thompson, April 1983).

45. *Command Analysis ... June 1963*, 8. Undated [1960?], untitled list of battery sites in Washington-Baltimore Defense, in file "Lists and Info - Nike Sites," HD-OCE, gives W-25 storage capacity as 12 Hercules missiles.

46. "Completed Military Contracts," 52; *Command Analysis ... June 1963*, 9-10, FM 44-1, 6-7; NGB RA No. 25-65, Apr. 19, 1965; NGB RA No. 6-68, Jan. 17, 1968; NGB RA No. 138-68, Sep. 23, 1968; *Argus* 16:12 (Dec. 1973), 6 and 17:6 (June 1974), 13. Mobilization Designees assigned to Davidsonville were never actually called up (Lt. Col. Thompson, Sep. 20, 1982). Mobilization Designees were the only Army Reserve contribution to the ARADCOM on-site program. See U.S. Army Command Information Unit, *Army News Features*, Washington, D.C., Oct. 15, 1973. For discussion of HIPAR and ABAR, see FM 44-82, 6.

47. *Command Analysis ... May 1965*, 46, 69; FM 44-82, 81; Lt. Col. Thompson, Sept. 20, 1982.

48. *Argus* 12:1 (Jan. 1969), 2, 14:5 (June 1971), 5, 14:8 (Sep.-Oct. 1971), 27, 16:8 (Aug. 1973), 25, 16:11 (Nov. 1973), 9, and 17:1 (Jan. 1974), 1.

49. *Argus* 17:4 (Apr. 1974), 22, 17:5 (May 1974), 2, and 17:7 (July 1974), 3.

50. Letter, G. R. Boggs, Chief, Real Estate Div., Baltimore Dist., COE, to author, Dec. 27, 1982; Telephone conversation with Joseph Bisho, GSA Federal Property Resources Div., Washington, D.C., Sep. 10, 1982; Land Records of Anne Arundel Co., MD: Liber 2832/Folio 778 and Liber 2868/Folio 464.

51. Annapolis *Evening Capital*, Dec. 5, 1973; Boggs to author, Dec. 27, 1982.

52. Real Estate Data, Inc., *Real Estate Atlas of Anne Arundel County, Maryland: Geographical Ownership Volume: City of Annapolis - County Non-Subdivisions: Alphabetical Index*, 12th ed., (Miami, FL, 1981), geog. pages 225-6.